CHAPTER 2
REVIEW OF LITERATURE

Knowledge is of two kinds. We know a subject ourselves or we know where we can find information upon it.

-Samuel Johnson

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Chapter 2: Review of Literature

Literature review is an objective analysis of contributions made by authors, researchers, experts including technical specialists. It is a chronological presentation of growth and development of literature in a particular field over a period of time. The present review analyzes the way in which subject fields have grown indicating various components that have added value. The very purpose of a literature review is to understand the experimented methods, techniques and skills of a phenomenon and its procedural presentation. This is believed to guide the researcher to formulate and identify the objectives, hypothesis, methods for collection and analysis of data.

Literature review enables the researcher to restructure, reorganize and recast the presentation in light of work done at various levels. Therefore a literature review is considered as an integral part of research studies.

The present review is grouped in following facets:

3. Indian Patents.
5. Statistical, analytical and comparative studies.

While conducting literature review, the following secondary information resources and reference books were consulted. These include Chemical Abstracts (CA), Library and Information Science Abstracts (LISA), Library, Information Science & Technology Abstracts (LISTA), Allen Kent’s Encyclopedia of Library and Information Science, Kirk Othmer Encyclopedia of Chemical Technology, McGraw Hill Encyclopedia of S&T, Ullman’s Encyclopedia of Chemical Sciences, Popular databases like Emerald, Jstore, Ebesco, Vidhyanidhi, Proquest UMI, Australian Digital Thesis Program, Science
Direct, Scopus, Ingenta, INFLIBNET Theses Database, patent databases viz. USPTO, Espacenet, Delphion, Dolphin, DWPI, CAS etc. The core periodicals in the area include World Patent Information, Scientiometrics, Journal of Intellectual Property Rights, Research Disclosure, Journal of Chemical Information, etc. Statistical Patent Information published by organizations like USPTO, EPO, Thomson Reuters, WIPO, OECD, CAS, TIFAC, etc were also referred. These resources enabled the researcher to get the information published in different forms and assisted in looking at the problem from various angles.

A literature search, for validating topic of research study and tracking developments made in it, must be conducted. Literature search helps in finding gaps in research. It is a detailed and organised step by step search for all materials, documents, and information available on a topic. The purpose of a literature search for a research article is to identify existing information sources (including books, journal articles, doctoral dissertations and Web documents) most relevant to the research in question. The various resources collected were categorized and a detailed study about patents was deduced. A brief coverage is listed below:

2.1 Patents: Nature, Growth and Development

Lenoir, M (1979) suggests the importance of patent literature in his study and stated that patent literature must be promoted and used for generating new developments.

Mlodzik, H (1979) indicates that patent literature is a tool in pharmaceutical industry, used for various purposes by scientists, researchers, policymakers etc. for the purpose of forecasting. His bibliometric study covers pharmaceutical patent literature published in the world and suggests that patent literature is important as an indicator for future development of new products.

Starkloff, B (1979) analyzes patent user groups in his study, and indicates the present and future use of patent literature. The author covers developments of patent literature in Germany, France and Ireland.
Smith, P. A (1986) emphasizes the importance of the patent literature as a source of technical information and as an important factor in economic development. His study concludes with the indication that since 1995, patent filing is growing in all countries.

Lemon, T H (1989) studies the aspects of patent literature published worldwide and indicates that patents are one of the important sources of technical, legal and commercial information. He has extracted the patent data from various patent databases for his study.

Ponkshe, S (1991) describes in detail, the concept of IP, procedure for patent filing, conventions related to patents, in his publication. This illustrates the basics of patent system.

Blackman, M (1994) has conducted a historical survey of specific technical field in patent disclosure. He has explored the field of umbrellas, parasols, and walking sticks from the British Patents during 1780 to 1994, using patent gazettes and online patent databases. He has given a detailed study for a period of 20 years.

Crawford, J (1999) describes the development of patent libraries like PTDL and PATLIB, etc. in developed countries. The development of databases has changed the patent scenario and most of the print media has reduced. The internet is also a prime tool for getting access to patent databases. He suggests that there is a need to develop web pages for patent centers for the purpose of sharing patent information.

Abraham, B (2001) studies development of Indian industries and technological developments in product and process technologies. He suggests that Indian industries need to have access to detailed information on technological innovations for filing patents for new products. The method suggested is that of undertaking analysis of Indian patent data. He studied patents accepted in field of Electronic Communication for five years and stated that analysis of Indian patent literature will provide help in developing new products.

Blackman, M (2004) has studied articles covered in the journal ‘World Patent Information’ from its inception 1979 on occasion of completing 25 years of publication. The analysis of articles was based on key topics like online databases, internet resources, intellectual property, industrial property, patent analysis and statistics etc.

Karisiddappa, C. R (2004) conducted an IPR awareness seminar in Karnataka University, Dharwad. The papers presented at the seminar dealt with the areas of patent systems in India, protection of chemical, pharmaceutical and biotechnological inventions, IPR information for R & D scientists, a case study of CSIR, Multi disciplinary studies on IPR in R & D, IP rights, etc. These are very informative.

Bregonje, M (2005) conducted a study to find usage of publications of patent literature. He describes the uniqueness of patent literature and stated that patent literature could be the best source of information as 80% information covered in the patent literature is not covered elsewhere (non patent literature).

MacMillan, D (2006) indicates that patent literature is a valuable source of scientific information, as it discloses new technologies and processes. Traditionally scientific literature relied on journals as a source of scholarly information. Patent literature is now more prominently used in scientific disciplines. Scientific researchers should be aware of usage of patent literature. To increase the use of patents, research students need to know value of patents, and how to locate patent information that they require.

2.2 Patent Information Resources and Services

Oppenheim, C (1997) points out that variety of electronic or digitized information sources are growing worldwide and are easily accessible. The importance of Intellectual Property is well illustrated in his study.
Clemente, M (1998) describes changing practices in patent libraries. Patent documents changed their form from paper (print) to microform to CD and eventually to digital format. Hence patent libraries are also changing their role subsequently. Information searching is getting more powerful over the years.

Adams, S (1999) indicates that Beilstein Handbook of organic chemistry was the main source of chemical patent searching prior to 1960.

Van Dulken, S (1999) compares the open source patent databases like PCT, USPTO, CIPO, and Esp@cenet available on Internet. Patent databases on internet are useful as they help users in getting access to patent information. He concludes that Internet databases are useful but they are not solution to every problem.

Newton, D (2000) has written a book that deals with patent information available on internet, and method of using it. Searching free databases, like esp@cenet, USPTO, PCT, PATON etc, is the main topic covered in this study. He has also covered commercial databases like WPI, CLAIMS, INPADOC, and Chemical Patents plus, etc.

Schwander, P (2000) reviews the tools available for patent information searcher. An evaluation of different patent information resources has been made along with comparison among free and commercial patent databases.

Van Dulken, S (2000) predicts future of patent information in his study and developments based on the experience in patent information. He states that use of information technology has influenced the increasing use of Internet. Commercial databases would also be more powerful with value addition.

Herce, J (2001) introduces Patent Information Service (WPIS) activities developed by WIPO for developing countries. Queries received at WIPO were analyzed in 2000. This included statistical analysis carried out for some countries during the period from 1994 to 1998.

Claus, C (2004) analyzes the use of patent literature in dissemination of patent information. He describes the efforts made by WIPO to educate scientists, engineers
and librarians in searching patent information from 1975. Though many disciplines are aware of patent information and patent filing, chemistry and chemical engineering fields are progressive in this area. He suggests having regional patent centers to take care of patent literature. He also adds that patent databases should be developed for proper searching of patent information.

Philipp, M (2005) explains the importance of value added information in scientific, technical and patent information fields. He has compared the use of Internet based free information sources and has given value added features required in them. The areas covered are content, time span, coding and indexing, training, customer support and pricing etc. He opines that, comprehensive searches through internet based free resources are expensive when real cost is considered because Internet resources cannot deliver the quality required. Hence, use of commercial value added databases is essential while searching patent and non patent literature. The commercial information sources have wide range of features for searching information.

Hirwade, A. W (2005) has submitted a doctoral dissertation on ‘Patent Information sources on Internet: An evaluation’. The thesis covers the aspects like introduction to IP, patent as a source of technical information, criteria used for evaluation of patent sites on internet, patent portals, commercial databases etc.

Sternitzke, C (2007) statistically analyzes patent databases for patent literature in the area of optoelectronics. He analyzes patent filing of firms, individuals and their citation frequency. The analytical data covers leading players in the field of optoelectronics, patent clusters, patenting strategies etc.

2.3 Indian patents

Ganguli, P (1994) describes the pattern of patenting in Chemical Sciences in India in relation to other countries. He analyzes and discusses the effect of Indian Patent Act 1970, on chemical industries in India.
Subbaram, N R (1994) explains the role of CSIR in IP protection in India. The patent unit of CSIR and its role in IPR is explained extensively in his study.

Ramchandran, R (1997) has submitted a thesis on “Patent document as a source of Technical Information for Industrial Development: Indian Scenario”. This thesis covers patent system, use of patent information, statistical analysis of Indian patents, patent users’ survey, training facilities and patent awareness programs, etc.

Gupta, V.K. (2000) analyzes trends in patent filing, by India in USA, since post WTO activities. He indicates contribution of CSIR as a leading organization in filing patents in India as well as USA. The private sector firms in area of drugs and pharmaceuticals have taken lead in filing patents in USA. He has also highlighted the trend in patent filing during the period from 1989 to 1999 and listed the organizations leading in patent filing. The leading subject area was chemical industries.

Bhattacharya, S (2002) makes a detailed assessment of Indian patent activity during the period from 1990 to 2002. His study focuses on different issues based on patent filing statistics.

Mandal, S C (2002) discusses the importance of patent information in socio economic development of India (being a signatory of the GATT agreement) in his doctoral dissertation.

Business World (2003) published a review article based on contribution of Indian patent filing and stated that CSIR is a leading organization in Indian patent filing. This analysis was carried out using PCT patent filing data for developing countries and it reported that institutions in India CSIR (184) stands first followed by Korea (184), China (136), Singapore (28). Whereas the industries Ranbaxy (56), Dr Reddy’s Lab(19), Sun Pharma (8), Aurobindo Pharma (5), J B Chemicals and Pharmaceuticals (5), Lupin Limited (5) were among the top 100 patent filing companies in developing countries. The analysis was based on the year 2002. During the same period USPTO granted patents to CSIR (58), National Institute of Immunology (9), Reddy’s (20),
GE(17), Indian Oil Corporation (12), Panancea Biotech (11), Dabur (9) and Lupin (9). The contribution of CSIR which was 9.5% in 1993 rose to 39.5% in 2003.

Ganguli, P (2004) reviews and compares patent filings in India during the period from 1979 to 2004. The development has been evaluated on the basis of Patent Law, WTO and PCT memberships. He suggests few aspects towards the development of Indian Patent Office activities in building electronic databases and providing more resources for Indian Patents.

Bizopedia (2008) has listed the top 10 Indian Pharma industries viz. Ranbaxy, Dr Reddy’s Lab, Cipla, Sun Pharma industries, Lupin Labs, Aurobindo Pharma, Cadila Healthcare, IPCA Laboratories, Aventis Pharma, Glaxo Smith Kline Pharma, etc. http://www.bizopedia.biz/2008/06/indias-top-10-pharma-companies.html

Debbarman, S (2008) collected Indian Patent filing data from the Annual reports of the Controller General of Patents, Design and Trademarks and has analyzed the Indian Patents’ contribution. He has noticed that there is an increase in the patent filing activity in India. The study also indicated that Maharashtra, Delhi and Tamil Nadu are the leading states in patent filing in India. USA, Japan, and Germany are leading countries, in patent filings in India in the NRI sector. Along with the prime subjects, Chemical Sciences, Biotechnology, Computer and Electronics are the emerging areas in patent filing. The data has been collected for the period from 1995 to 2005. It is noticed that the number of patents filed was 1606 in 1995 and has increased to 3630 in 2004 i.e. 126% in increase from the national filing.

Jayaraman, T. (2009) discusses in his paper, issues related to development of S & T policies in India and S & T output in terms of publications. He compares the publication cited in SCI among five countries, India, China, Korea, Brazil and Israel from 1980 to 2000. He has also studied patenting activity in India and progress made by Indian companies in filing patents. A comparison of Patents filed by Indians and foreign residents is well illustrated in his paper.
2.4 Patent Searching Techniques

Simmons, E S (1998) states that pharmaceutical industry depends on market and the market is based on patent protection. For filing the patents, researchers must know prior art. The tools for assessing the prior art are databases that index chemical structures of chemical compounds and Markush formulas in pharmaceutical patents. This indicates that advanced searching tools are required for searching patent data.

Glander-Hobel, C (2002) compiled internet portals for chemists. This is a very useful compilation for searching information on internet. Subject collection sites cover general chemistry, analytical chemistry, environmental research, toxicology and patents. The addresses / URL’s of the portals and sites are given along with the contents.

Blackman, M (2003) described functions and activities of various patent information providers like CAS/STN, Derwent, WIPO, Questel-orbit, EPO, USPTO, Delphian, PatBase, etc.

Camus, C (2003) described function of the software which allows users to create and automatically update patent collection data, which helps in monitoring trends in technology to assess strategies. The package extracts structured and non structured data from various sources online using information extraction and text mining, helpful for statistical data compilation and patent clustering analysis. This is very useful for decision makers to analyze knowledge and build powerful strategies. The software ‘ArchiPat’ developed for this purpose is described with its utility in analyzing patent data.

Stock, M (2006) analyzes Intellectual Property information based on information providers. He has compared some experts like Thomson, Dialog, Esp@cenet, Quetel Orbit, and STN International. He has taken into consideration some vital points such as structure, Markush Search, Patent Family Search, biosequence search, alongwith criteria like ranking, mapping, visualization etc for comparison. There are several products and providers available in the field of IP information.
Badger, E (2008) describes techniques for analyzing data collected by searching online, using visualization software for providing statistical and semantic analysis.

Calcagno, M (2008) discusses patent mapping concept and analysis of bibliometric measures like inventors, patent assignee, patent countries, patent years etc. The efforts have been made in analyzing pharmaceutical patents covered in DWPI.

Macmillan, M (2008) indicates the need of educating the chemistry students with the importance of patents and use of patent databases for searching information.

Barnard, J.M (2009) has indicated that new drug molecule discovery needs to be assessed in chemical sciences using databases like Markush structures.

Staveren, M (2009) has discussed prior art searching of patents over internet. He has also mentioned that Internet made revolutionary changes and making available resources of all types. These resources cover a variety of patent information sources useful for searching information (free or chargeable).

Bonino, D (2010) has reviewed the state of the art in patent information and evolutions in patent informatics. He has stated that information related to national and international patents is a critical asset for every innovative company. The complexity of managing, searching, analyzing, patent information is needed by the concerned company users in different tasks for finding solutions in different fields. Patinformatics (Patent Informatics) is in demand and an updated overview of patent information is needed by researchers.

2.5 Statistical, Analytical and Comparative Studies.

Cole, J (1917) has published a statistical analysis of history of comparative anatomy. Cole used published literature for the first time to build up a quantitative picture of progress in the field of research.

Hulme, E. W. (1923) has used patents in his study. He has correlated patents and scientific literature to measure social progress in Britain. Hulme pioneered a modern methodology for tracking history and development of science. The analysis of patent
literature is also now possible as there are many well defined patent databases available for searching information. Many researchers are using Patent Literature and also patent citation studies for indicating technological developments and information flow in their subject disciplines. The concept of examining literature goes back to the beginning of 20th Century.

Dunn, H (1979) submitted a thesis on “Bibliographic analysis of patent literature and its relationship to scientific literature”. He summarized that patents are public knowledge but a primary source of information to the researcher. Patents are treated as information resource which contributes to the growth of S & T. He has suggested that in Chemical Sciences, patent literature plays a significant role as it discloses current research ideas as soon as they file applications in the patent office for grant of monopoly.

Soete, L.G (1983) has stated that patent information or literature is considered as one of the most established, historical method of quantifying the output of S & T.

Davis, G (1986) studies patent literature published in 1985 in the area of Biomedical sensor technology using statistical data of patent filings in this area.

Baseberg, B L (1987) reports that patent literature has different utilities. Patent statistics are used as technology indicators. These technology indicators are useful in analyzing the patent data.

Garg, K C (1988) has studied bibliometric characteristics of literature on patents published from 1900 to 1980. The data has been analyzed by sources of information like books, conference proceedings, reports, journals, etc. based on different languages. He also emphasized that the growth of patent literature is exponential in nature. This study is based on Bradford’s law.

Ramchandran, R (1990) conducted a study and analyzed patent literature with reference to Indian Patent fillings in 1987. He has conducted survey of Indian patents as well as major patent publishing countries for the period from 1985 to 1987. The study involves patents filed in countries, subject area etc. The study covers countries like USA, UK,
Germany, Czechoslovakia and France. An analysis of subject-wise filing of Indian patents for a period of 3 years has been covered in this study.

Tabata, T (1994); Santus G (1995); Yoo H (2005); and Meibuhr (1966) conducted specific studies in subjects based on patent literature like catalysis, drug delivery, biosequences and fuel cells etc.

Debackere, K (1999) has analyzed and linked regional technological capabilities of a region, with economic strength of that region. He has used EPO patent data for this study. The Belgian patent filing is analyzed from 1978 to 1996.

Meyer, M. (2000) has counted patents related to basic research activities through citations, and suggested a way of measuring patent relevance to industries.

Bhattacharya, S. (2002) has compared technological assertiveness of India and China by using patenting as a strategic act. The patenting activities of both countries in pre and post WTO period have been analyzed for this purpose. Among developing countries, India and China have potential to emerge as significant players in global technology market as well as technology differentiated product market.


Trippe, A (2003) explains overview of field of Patinformatics, which is applied to patent information to discover relationships and trends. He explains software tools which are helpful for clustering, mapping, analyzing, etc.


Pinheiro-Machado, R. (2004) has compared patent filing activities of industries and academic institutions. He has pointed out that academic patenting activity is recent even
in developed countries. He has noticed that patent filing, in academic institutions, is increasing everywhere due to awareness and technological innovation. He has made an effort to compare the US and Brazilian research institutes involved in patent filing.


Short, P L (2006) has listed top 50 global chemical industries on the basis of a survey (worldwide sales survey) published in the Chemical and Engineering News. Few industries among them were Dow chemical (USA), BASF(Germany), Shell (UK), ExxonMobil(USA), Total (France), DuPont(USA), China Petroleum and Chemical (China), Bayer(Germany), BP (UK), SABIC (Saudi Arabia), Formosa Plastics (Taiwan), Lyondell Chemical(USA), Mitsubishi Chemical(Japan), Degussa (Germany), Mitsui Chemicals( Japan), Akzo Nobel (Netherlands), Sumito Chemicals (Japan), ICI (UK), Basell (Netherlands), Shin Etsu Chemical (Japan), DSM (Netherlands), Dainippon Ink and Chemicals(Japan), Asahi Kasei (Japan), Solvay(Belgium), Rohm and Hass(USA), Eastman Chemicals (USA), Reliance Industries (India), GE(USA), Clariant (Switzerland), Syngenta(Switzerland), Ciba Specialities (Switzerland), Nova Chemical (Canada), Toray industries (Japan), BOC(UK), PPG Industries(USA). This information was useful for selecting major companies though the data changed frequently.

Van Looy, B. (2007) has studied USPTO patent data in the area of biotechnology for 20 countries covering time period from 1992 to 1999. The study investigates relationship between scientific intensity of patents and technological productivity for the respective countries involved. He has considered the number of non patent references in patents as an approximation of scientific intensity of technology whereas country’s technological and scientific performance is measured in terms of productivity (i.e. number of patents
and publications per capita). This study has been useful for tracking growth in the field of biotechnology.

Organization for Economic Cooperation and Development (OECD) (2007) publishes a compendium of patent statistics every year. The 2007 report analyses data contributed by members of OECD (EC, EPO, JPO, USPTO, WIPO etc.).


Thomson Reuters (2007) analyzes the global patenting activity among G8 countries (Canada, France, Germany, Italy, Japan, Russia, UK and US), China and Korea and it publishes trends every year, based on the collection of data, which are useful for analyzing the development in patent filings using various indicators.

Biglu, M H (2008) has conducted a scientometric study of patent literature in area of medicine. This study was mainly conducted to analyze trends in patent literature in the area of medicine. His period of study was from 1965 to 2005. He has analyzed languages, publication types, journals etc. and has pointed out that coverage of patent literature in MEDLINE is increasing annually by 11.4%. The contribution of English is 90% for patents covered in MEDLINE followed by Russian (4.12%), French (1.36%), and German (1.20%). The subject coverage for filing patent relates to genes and genetics. The major patent filing countries are reported as USA, (55%), UK (27%), USSR (4%), Canada (2%). The major contributor is USA. Scientometric study is a tool to analyze measurement of patent and research activities, as well as a scientific output in the form of number of patents filed. He has compared the study of patents and journal articles in the area of medicine.

Van Zeebroeck, N (2008) has studied patent filings worldwide. Patents analysis at European Patent office (EPO) over two decades have been considered in his study. The analysis was carried out based on country of applicant and technological area.
Lombardo, L (2008) has presented new indicators linking patenting and business by measuring R & D expenditure based on the OECD patent data.

Chemical Abstracts Service (2008) illustrated statistical summary of patents filed and abstracted in CA during the period from 1907 to 2007. CAS published Chemical Abstracts Publication Record (1907 to 2007) which is a very well developed analysis of yearly publication of abstracts in CA, indicating the coverage of periodical articles, patents and books, etc. The study of this data highlights various aspects and is an indicator for growth in chemical patent literature.


World Intellectual Property Organization (WIPO) (2008) conducted a conference, at Vienna, Austria on 3rd and 4th of September 2008, on patent statistics for decision makers and the articles published in the proceedings highlighted the importance of patent statistics in R & D and also tracked the trends for futuristic developments as a part of decision making. http://www.epo.org/about-us/events/archive/2008/patent-statistics2008.html. This is the site for the conference on patent statistics for decision maker which is organized by EPO and OECD and it provides patent related events.
Society of Information Science (SIS). (2009) organized a workshop on Patinformatics in December 2009. The articles published in the proceedings highlighted the importance of patents, patent information and patent analysis. Patinformatics, a term coined by Tripps, maybe used in various studies to map the patent literature published in various fields.

2.6 Patent Trends

Kurt, R (1991) has analyzed the patent filing trends over a period of 20 years and indicates the dramatic rise in patent filing by Japan.

Liu, S. & Shyu, J (1997) point out that patent contains technological information. Patent analysis is a unique tool for finding technological developments. He has conducted case studies of LED & TFT and has developed new trends.

Schummer, J (1997) has studied developments in area of chemical sciences during the period from 1800 to 1995 and indicates growth of chemical patents.

Hicks, D. (2001) has used the patent bibliometrics to understand American Innovation System. He has indicated that their growth in university patenting is shrinking and becoming dominant in few cities. Patent growth, in general and in universities in US, is increasing. He points out that patent growth is now not only restricted to R & D but also universities which are leading in patent filings.

Watanabe, C (2001) describes importance of patent statistics which is useful to economists. He selected few innovative processes for comparison during the period from 1980 to 1996.

Breitzman, A (2002) used the patent analysis in different context and indicated its use for tracking trends.


Pilkington, A (2002) states that patent data can act as an indicator for technological developments. He has studied US Patents and analyzed automobile industry activities.

Tijssen, Robert J W (2002) points out that many innovative studies and surveys are carried out to find impacts and benefits of research in technical progress, yet some tools are required to analyze data and to monitor R & D innovations in detail. In his study, he analyzed patent citation data from Netherlands’ patent filings and studied science dependency of technologies using patent literature.


Huang, Z (2004) has conducted a study of US patent analysis in area of Nanoscale Science and Engineering (NSE) which is a new emerging area. Patent data has been compiled using keywords (Nano Terms) in the field of NSE and the trends from 1976 to 2003 have been. Top 20 countries, top 20 institutions, top 20 technology fields etc have been marked during this period and their patent publications have been analyzed in his study. Mapping of patents has been plotted.

Simmons, E S (2005) has predicted trends based on patent analysis in the area of research and business environment by studying classifications of patents issued to companies around the world. He describes the changes that have taken place in patent information environment due to changes in patent law, international treaties etc.

Kadam, K.S. (2007) describes in his paper, patentable subject matter, Indian patenting procedure, basics of patents, and patenting activities in emerging fields like biotechnology, bioinformatics, agricultural biotechnology, nanotechnology etc.

Li, X (2007) has made a comparative study of nanotechnology development using patent data form USPTO, EPO, JPO etc for the period from 1976 to 2004. From his study many issues have been isolated like number of patents filed in nanotechnology and its trends, top nanotechnology plant, etc.

Wikipedia has listed 50 largest pharmaceutical, biotechnology companies based on the data of revenue earned and R & D expenditure which includes Pfizer (Wyeth)(USA), Johnson and Johnson(USA), Hoffman La Roche (Switzerland), Novratis (Switzerland), Glaxo Smith Kline(UK), Sanofi Aventis(France), AstraZeneca ( UK), Abbott (USA), Merck & co.(USA), Bristol Meyers (USA), Eli Lilly & Co (USA), Boehringer (Germany), Takeda Pharmaceuticals (Japan), Amgen (USA), Genentech (USA), Baxter(USA), Teva Phamaceuticals (Israel), Daiichi Sankyo(Japan), P & G (USA), Novo Nordisk (Denmark), SINOPHARM (China), Allergan (USA), Chugai Pharma (Japan), Biogen Idec (USA), Taiho Pharma (Japan), Mylan (USA). (http://en.wikipedia.org/wiki/List_of_pharmaceutical_companies)

Society for Information Science (2009): Conference on Recent trends in Patinformatics: 26th National Convention, 9 to 12 Dec 2009. The main aim of the conference was to educate researchers in patinformatics and its applications in decision making. The speeches in this conference related to the importance of patinformatics, value added patent analysis and visualization, patent mapping from databases to business applications, tools for patinformatics, IP and patent analytics, use of patent information as a data mining tool, Indian Patinformatics. These are the latest issues in patent jargon.
Chang, P. L. (2010) reports in his study the importance of patent analysis to track technological trends as well as emerging trends in the discipline. A case study of nanotube field has been studied and it reports emerging technologies in this area.

Wong, P (2010) studies the University patenting activity using USPTO, EPO patent databases. He studies scientific publications among 281 leading universities worldwide. He has also presented university patenting trends by analyzing patent output.

From these literary resources, guidelines for development of concepts in relation to patents, patent system, patent growth, analysis, Indian patents, trends in patent filing, subject wise patent filing, country wise patent filing etc. could be developed. The above literature was useful for building and confirming concepts while developing the research study.

References


